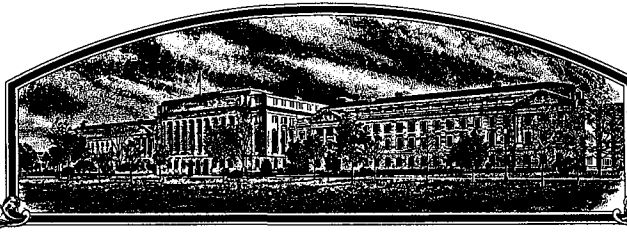


No.

9100248



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

BEAUB Plant Genetics

Whereas, THERE HAS BEEN PRESENTED TO THE
Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT (U.S.C. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

CORN

'F118'

In Testimony Whereof, I have hereunto set
my hand and caused the seal of the Plant
Variety Protection Office to be affixed
at the City of Washington, D.C.
this 30th day of October in
the year of our Lord one thousand nine
hundred and ninety-two.

Attest:

Kenneth H. Evans
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Edward Madigan
Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421) information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) (as it is to appear on the Certificate) DEKALB Plant Genetics		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NO.	3. VARIETY NAME F118
4. ADDRESS (street and no. or R.F.D. no., city, state, and ZIP) 3100 Sycamore Road DeKalb, IL 60115		5. PHONE (Include area code) (815) 756-7333	FOR OFFICIAL USE ONLY PVPO NUMBER 9100248 Filing and Examination Fee: \$ 2150.00 Date August 19, 1991 Certificate Fee: \$ 250.00 Date October 8, 1992
6. GENUS AND SPECIES NAME Zea Mays	7. FAMILY NAME (Botanical) Gramineae		
8. CROP KIND NAME (Common Name) Corn	9. DATE OF DETERMINATION Winter 1981		Filing and Examination Fee: \$ 2150.00 Date August 19, 1991 Certificate Fee: \$ 250.00 Date October 8, 1992
10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.) General Partnership			
11. IF INCORPORATED, GIVE STATE OF INCORPORATION		12. DATE OF INCORPORATION	
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS Mr. Robert E. Roman, Jr., Assistant General Counsel DEKALB Genetics Corporation 3100 Sycamore Road DeKalb, IL 60115			
			PHONE (Include area code): (815) 758-9278

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow INSTRUCTIONS on reverse)

a. ☒ Exhibit A, Origin and Breeding History of the Variety.

b. ☒ Exhibit B, Novelty Statement.

c. ☒ Exhibit C, Objective Description of Variety.

d. ☐ Exhibit D, Additional Description of Variety.

e. ☒ Exhibit E, Statement of the Basis of Applicant's Ownership.

f. ☒ Seed Sample (2,500 viable untreated seeds). Date Seed Sample mailed to Plant Variety Protection Office **8-13-91**

g. ☒ Filing and Examination Fee (\$2,150) made payable to "Treasurer of the United States."

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See section 83(a) of the Plant Variety Protection Act.)
☐ YES (If "YES," answer items 16 and 17 below) ☒ NO (If "NO," skip to item 18 below)

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?
☐ YES ☐ NO

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?
☐ FOUNDATION ☐ REGISTERED ☐ CERTIFIED

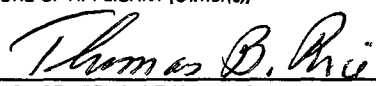
18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.?
☐ YES (If "YES," through ☐ Plant Variety Protection Act ☐ Patent Act. Give date: _____) ☒ NO

19. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETING IN THE U.S. OR OTHER COUNTRIES?
☐ YES (If "YES," give names of countries and dates) ☒ NO

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in section 41, and is entitled to protection under the provisions of section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT (Owner(s)) 	CAPACITY OR TITLE President	DATE August 5, 1991
SIGNATURE OF APPLICANT (Owner(s))	CAPACITY OR TITLE	DATE

Origin and Breeding History
F118

Summer 1975	The cross B73.T220 was made. (1975 Nursery Book row numbers 5,611 and 5,612.)
Summer 1977	Bulked S0 seed was grown and self-pollinated. All S1 seed was saved and bulked. (1977 Nursery Book row number 2260.)
Summer 1978	Bulked S1 seed was grown in 2-20 foot nursery rows and self pollinated. Twelve (12) self-pollinated ears were selected and shelled separately. (1978 Nursery Book row numbers 1901-1902.)
Summer 1979	Six (6) S2 ears were grown on an ear-to-row basis. Two S3 ears were selected from the six S2 rows and shelled separately. (1979 Nursery Book row numbers 2317-2322.)
Summer 1980	Two (2) S3 ears were grown on an ear-to-row basis. One (1) S4 ear was selected from the two S3 rows. (1980 Nursery Book row numbers 3205-3206.)
Winter 1981	One S4 ear was grown and self-pollinated. (1981 Winter Nursery book row number 1273.) The bulked seed from this row was assigned the inbred code F118.

Statement of Stability and Uniformity

Corn inbred F118 was coded in 1981 and has been reproduced since by self-pollination. Inbred F118 has been judged to be phenotypically and genetically stable. F118 is uniform for all traits observed.

Statement of Variants

F118 shows no variants other than what would be normally expected due to environment or that would occur for almost any characteristic during the course of sexual reproduction.

Novelty Statement

F118 is a yellow dent corn inbred. F118 most clearly resembles B73HT.

F118 significantly differs from B73HT at the 5% level for the following numeric traits: plant height, stalk diameter, stalk internode length, leaf length, peduncle length, tassel branch number, ear length, ear weight, shank internode number, kernel length, 50% standard shed GDU and 50% standard silk GDU (See Exhibit B, Table 1).

TABLE 1. Morphological traits that show a significant difference between inbred and check 1990 Illiopolis Inbred Test data).

Trait	MEAN		Difference		
	F118	B73HT	In Means	s	lsd**
Plant Height (cm.)	212	234	22	7.57	15.0
Stalk Diameter (cm.)	3	2	1	0.16	0.3
Stalk Internode Length	13	15	2	0.82	1.6
Leaf Length	82	76	6	2.53	5.0
Peduncle Length (cm.)	10	12	2	0.97	1.9
Tassel Branch Number	10	5	5	1.13	2.2
Ear Length (cm.)	12	15	3	0.77	1.5
Ear Weight (gm.)	78	115	37	10.23	20.3
Shank Internode Number	5	6	1	0.83	1.6
Kernel Length (mm.)	10	11	1	0.46	0.9
50% Standard Shed GDU	1627	1525	102	38.39	76.0
50% Standard Silk GDU	1601	1498	103	45.86	90.8

*s = $\sqrt{\text{error mean square (df=107)}}$					
**Least significant difference based on Analysis of Variance at the 5% level of significance (107 entries and 2 replications).					
$\text{lsd} = t_{.05/2} \ s \sqrt{2/r}$ ($t_{.05/2} = 1.98, r = 2$)					

F118 differs from B73HT for the following morphological traits:

	<u>F118</u>	<u>B73HT</u>
Brace root color	Green	Purple
Leaf sheath pubescence	Light	Heavy
Leaf marginal waves	Many	Few
Anther color	Tan	Green Yellow

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, POULTRY, GRAIN & SEED DIVISION
BELTSVILLE, MARYLAND 20705

EXHIBIT C
(Corn)

OBJECTIVE DESCRIPTION OF VARIETY
CORN (ZEA MAYS)

NAME OF APPLICANT(S) DEKALB Plant Genetics	FOR OFFICIAL USE ONLY PVPO NUMBER 9100248
ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code) 3100 Sycamore Road DeKalb, IL 60115	VARIETY NAME OR TEMPORARY DESIGNATION F118

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g., 0 8 9 or 0 9) when number is either 99 or less or 9 or less.

1. TYPE:

2

1 = SWEET

2 = DENT

3 = FLINT

4 = FLOUR

5 = POP

6 = ORNAMENTAL

2. REGION WHERE BEST ADAPTED IN THE U.S.A.:

1 = NORTHWEST

2 = NORTHCENTRAL

3 = NORTHEAST

4 = SOUTHEAST

5 = SOUTHCENTRAL

6 = SOUTHWEST

7 = MOST REGIONS

3. MATURITY (In Region of Best Adaptability):

(Under "comments" (pg. 3) state how
heat units were calculated)

9 0

DAYS FROM EMERGENCE TO 50% OF PLANTS IN SILK

1 6 0 1

HEAT UNITS

DAYS FROM 50% SILK TO OPTIMUM EDIBLE QUALITY

HEAT UNITS

5 8

DAYS FROM 50% SILK TO HARVEST AT 25% KERNEL MOISTURE

1 2 0 0

HEAT UNITS

4. PLANT:

2 1 2

CM. HEIGHT (To tassel tip)

0 9 5

CM. EAR HEIGHT (To base of top ear)

1 3

CM. LENGTH OF TOP EAR INTERNODE

Number of Tillers:

2

1 = NONE

2 = 1-2

3 = 2-3

4 = > 3

Number of Ears Per Stalk:

2

1 = SINGLE 2 = SLIGHT TWO-EAR TENDENCY

3 = STRONG TWO-EAR TENDENCY 4 = THREE-EAR TENDENCY

Cytoplasm Type:

1

1 = NORMAL

2 = "T"

3 = "S"

4 = "C"

5 = OTHER (Specify)

5. LEAF (Field Corn Inbred Examples Given):

Color:

2

1 = LIGHT GREEN (HY)

2 = MEDIUM GREEN (WF9)

3 = DARK GREEN (B14)

4 = VERY DARK GREEN (K166)

Angle from Stalk (Upper half):

1

1 = < 30°

2 = 30-60°

3 = > 60°

Sheath Pubescence:

1

1 = LIGHT (W22)

2 = MEDIUM (WF9)

3 = HEAVY (OH26)

Marginal Waves:

3

1 = NONE (HY)

2 = FEW (WF9)

3 = MANY (OH7L)

Longitudinal Creases:

1

1 = ABSENT (OH51)

2 = FEW (OH56A)

3 = MANY (PA11)

Width:

0 9

CM. WIDEST POINT OF EAR NODE LEAF

Length:

0 8 2

CM. EAR NODE LEAF

1 8

NUMBER OF LEAVES PER MATURE PLANT

6. TASSEL:

9100248

1 0

NUMBER OF LATERAL BRANCHES

Branch Angle from Central Spike:

2

1 = < 30°

2 = 30-40°

3 = > 45°

Penduncle Length:

1 0

CM. FROM TOP LEAF TO BASAL BRANCHES

Pollen Shed:

2

1 = LIGHT (WF9)

2 = MEDIUM

3 = HEAVY (KY21)

6

Anther Color:

1 = YELLOW

2 = PINK

3 = RED

4 = PURPLE

5 = GREEN

5

Glume Color:

6 = OTHER (Specify)

Tan

(Weak Anthocyanin)

Pollen Restoration for Cytoplasm (0 = Not Tested, 1 = Partial, 2 = Good)

"T"

"S"

"C"

OTHER (Specify Cytoplasm and degrees of restoration)

7. EAR (Husked Ear Data Except When Stated Otherwise):

1 2

CM LENGTH

3 9

MM. MID-POINT
DIAMETER

7 8

GM. WEIGHT

Kernel Rows:

2

1 = INDISTINCT

2 = DISTINCT

1 6

NUMBER

2

1 = STRAIGHT

2 = SLIGHTLY CURVED

3 = SPIRAL

Silk Color (Exposed at Silking Stage):

1

1 = GREEN

2 = PINK

3 = SALMON

4 = RED

Husk Color:

1

FRESH

1 = LIGHT GREEN

2 = DARK GREEN

3 = PINK

6

DRY

4 = RED

5 = PURPLE

6 = BUFF

Husk Extension: (Harvest Stage)

2

1 = SHORT (Ears Exposed) 2 = MEDIUM (Barely Covering Ear)
3 = LONG (8-10CM Beyond Ear Tip)
4 = VERY LONG (> 10 CM)

Husk Leaf:

1

1 = SHORT (< 8 CM) 2 = MEDIUM (8-15 CM)
3 = LONG (> 15 CM)

Shank:

0 9

CM LONG

5

NO. OF INTERNODES

Position at Dry Husk Stage:

1

1 = UPRIGHT

2 = HORIZONTAL

3 = PENDENT

Taper:

2

1 = SLIGHT

2 = AVERAGE

3 = EXTREME

Drying Time (Unhusked Ear):

2

1 = SLOW

2 = AVERAGE

3 = FAST

8. KERNEL (Dried):

Size (From Ear Mid-Point):

1 0

MM LONG

0 8

MM. WIDE

0 4

MM. THICK

Shape Grade (% Rounds)

3

1 = < 20

2 = 20-40

3 = 40-60

4 = 60-80

5 = > 80

5

8. KERNEL (Dried) :

9100248

<input type="text" value="1"/>	Pericarp Color:	1 = COLORLESS	2 = RED-WHITE CROWN	3 = TAN	4 = BRONZE		
		5 = BROWN	6 = LIGHT RED	7 = CHERRY RED			
		8 = VARIEGATED (Describe) _____					
<input type="text" value="1"/>	Aleurone Color:	1 = HOMOZYGOUS		2 = SEGREGATING (Describe) _____			
<input type="text" value="1"/>		1 = WHITE	2 = PINK	3 = TAN	4 = BROWN	5 = BRONZE	6 = RED
		7 = PURPLE	8 = PALE PURPLE	9 = VARIEGATED (Describe) _____			
<input type="text" value="3"/>	Endosperm Color:	1 = WHITE	2 = PALE YELLOW	3 = YELLOW	4 = PINK-ORANGE	5 = WHITE CAP.	
Endosperm Type:							
<input type="text" value="3"/>		1 = SWEET (su1)	2 = EXTRA SWEET (sh2)	3 = NORMAL STARCH	4 = HIGH AMYLOSE STARCH		
		5 = WAXY STARCH	6 = HIGH PROTEIN	7 = HIGH LYSINE	8 = OTHER (Specify) _____		
<input type="text" value="2"/>	<input type="text" value="0"/>	GM. WEIGHT /100 SEEDS (Unsize Sample)					

9. COB:

<input type="text" value="2"/>	<input type="text" value="4"/>	MM. DIAMETER AT MID-POINT
Strength:		Color:
<input type="text" value="2"/>	1 = WEAK	2 = STRONG
<input type="text" value="3"/>	1 = WHITE	2 = PINK
	3 = RED	4 = BROWN
	5 = VARIEGATED	6 OTHER (Specify) _____

10. DISEASE RESISTANCE (0 = Not Tested, 1 = Susceptible, 2 = Resistant):

<input type="text" value="0"/>	STALK ROT (Diplodia)	<input type="text" value="0"/>	STALK ROT (Fusarium)	<input type="text" value="0"/>	STALK ROT (Gibberella)
<input type="text" value="2"/>	NORTHERN LEAF BLIGHT	<input type="text" value="2"/>	SOUTHERN LEAF BLIGHT	<input type="text" value="0"/>	SMUT
<input type="text" value="0"/>	(Race 2) SOUTHERN RUST	<input type="text" value="0"/>	CORN SMUT	<input type="text" value="0"/>	BACTERIAL WILT
<input type="text" value="0"/>	BACTERIAL LEAF BLIGHT	<input type="text" value="0"/>	MAIZE DWARF MOSAIC	<input type="text" value="0"/>	STUNT
<input type="text" value="2"/>	OTHER (Specify) Anthracnose				

11. INSECT RESISTANCE (0 = Not Tested, 1 = Susceptible, 2 = Resistant):

<input type="text" value="2"/>	CORNBORER (First Brood)	<input type="text" value="0"/>	EARWORM	<input type="text" value="0"/>	SAPBEETLE	<input type="text" value="0"/>	APHID
<input type="text" value="2"/>	ROOTWORM (Northern)	<input type="text" value="0"/>	ROOTWORM (Western)				
<input type="text" value="0"/>	ROOTWORM (Southern)	<input type="text" value="0"/>	OTHER (Specify) _____				

12. VARIETIES MOST CLOSELY RESEMBLING THAT SUBMITTED FOR THE CHARACTERS GIVEN:

CHARACTER	VARIETY	CHARACTER	VARIETY
Maturity		Kernel Type	
Plant Type		Quality (Edible)	
Ear Type		Usage	

REFERENCES:

U.S. Department Agriculture. Yearbook 1937.
 Corn: Culture, Processing, Products. 1970 Avi Publishing Company, Westport, Connecticut. (Numerous (Authors)
 Emerson, R.A., G.W. Beadle, and A.C. Fraser. A Summary of Linkage Studies in Maize. Cornell A.E.S., Mem. 180. 1935.
 The Mutants of Maize. 1968. Crop Science Society of America. Madison, Wisconsin.
 Stringfield, G.H. Maize Inbred Lines of Ohio. Ohio A.E.S. Bul. 831. 1959.
 Butler, D.R. 1954 - A System for the Classification of Corn Inbred Lines - PhD. Thesis, Ohio State University.

COMMENTS: Heat Unit Calculations:

$GDU = \text{Daily Max Temp } (\leq 86F) + \text{Daily Min Temp } (\geq 50F) - 50F$

Additional Description of Variety*Isozyme Comparison of CI28A and F118*

Loci	CI28A	F118
Acph1	2/2, 2/4, 4/4	2/2
Cat3	9/9	12/12
Got3	4/4	4/4
Got2	4/4	4/4
Got1	4/4	4/4
Idh1	4/4	4/4
Idh2	4/4, 4/6, 6/6	4/4
Mdh3	16/16	16/16
Mdh4	12/12	12/12
Mdh5	12/12	12/12
Pgm-1	9/9	9/9
Pgm-2	4/4	4/4
6-Pgd-1	2/2, 2/3.8, 3.8/3.8	3.8/3.8
6-Pgd-2	5/5	5/5
Phi	4/4, 5/5	5/5

Number of seeds analyzed: 12

CI28A and F118 were characterized for 15 isozyme alleles. F118 is completely distinct from CI28A for the Cat3 allele. CI28A is also segregating for the Acph1, Idh2, 6-Pgd-1, and Phi alleles, while F118 is pure for each of these alleles. F118 is distinct from CI28A on the basis of this information.

Statement of the Basis of Applicant's Ownership

DEKALB Plant Genetics is the sole, original, and first breeder of corn inbred F118.